

What is claimed is:

1. A printed circuit board support comprising;  
a first member having a planar upper surface for supporting a printed circuit board;  
at least one second member movably coupled to a first side of said first member and movable toward and away from said side of said movable member, said at least one second member having an upper surface for supporting a printed circuit board; and  
a bias source for biasing said second member in a direction away from said first member.
2. The printed circuit board support of claim 1 further comprising a contact surface on said second member for contacting a positioning surface of a printed circuit board assembly station.
3. The printed circuit board support of claim 2 further comprising a stop for limiting movement of said second member away from said first member.

4. The printed circuit board support of claim 2 further comprising at least one third member movably coupled to a second side of said first member and movable toward and away from said second side of said movable member, said at least one third member having an upper surface for supporting a printed circuit board.

5. The printed circuit board support of claim 4 further comprising a bias source for biasing said third member in a direction away from said first member.

6. The printed circuit board support of claim 4 further comprising a contact surface on said third member for contacting a positioning surface of a printed circuit board assembly station.

7. The printed circuit board support of claim 2 wherein said second and said third members are movable between a fully open position when no compressive forces are applied thereto and a fully compressed position when sufficient force is applied to said second and said third members to compress said support.

8. The printed circuit board support of claim 4 wherein a plurality of perforations extend through said first member from said planar upper surface to communicate with a vacuum source for drawing a printed circuit board against said upper surfaces.

9. The printed circuit board support of claim 4 wherein said first member comprises a plurality of recesses in the underside thereof, and wherein a plurality of magnets are seated in said recesses.

10. A printed circuit board support comprising:  
a pair of parallel outer rails, each having outer surfaces for abutting engagement with a plurality of spaced surfaces on a positioning device at said assembly station, said outer rails having respective upper surfaces for supporting a printed circuit board;  
a pair of parallel inner rails between and spaced from said pair of outer rails, said inner rails having respective upper surfaces for supporting a printed circuit board;  
a mid-block between and spaced from said pair of inner rails, said mid-block having an upper surface for supporting a printed circuit board at said assembly station;

a first plurality of rods each fixed at one end thereof to a first one of said outer rails and extending through a first plurality of transverse holes in a first one of said inner rails;

a second plurality of rods each fixed at one end thereof to a second one of said outer rails and extending through a second plurality of transverse holes in a second one of said inner rails; and

a plurality of components for biasing each one of said outer rails and said inner rails outwardly from said mid-block, said outer rails being movable toward each other against the bias of said plurality of biasing components by compression forces applied against said outer rails.

11. The printed circuit board support of claim 10 wherein said positioning device is at a screenprinter station.

12. The printed circuit board support of claim 11 wherein said outer rails are movable between a fully open position when no compressive forces are applied thereto and a fully compressed position when sufficient force to compress said support is applied.

13. The printed circuit board support of claim 11 and wherein said first and said second plurality of rods extend at least into said mid-block when no compressive forces are applied to said outer rails.

14. The printed circuit board support of claim 11 wherein said first and said second plurality of rods extend through the respective opposing inner rail and at least into the opposing outer rail when said outer rails are fully compressed.

15. The printed circuit board support of claim 11 further comprising a support handle attached to each end of each one of said outer rails wherein the support handles are engageable for applying compressive forces to the printed circuit board support.

16. The printed circuit board support of claim 11 wherein said mid-block is elongated, and wherein at least one perforation extends through said mid-block from said upper support surface, said at least one perforation communicating with a vacuum source for drawing a printed circuit board against said upper support surface.

17. The printed circuit board support of claim 11 wherein a plurality of perforations extend through said mid-block from said upper support surface to communicate with a vacuum source for drawing a printed circuit board against said upper support surface.

18. The printed circuit board support of claim 14 further comprising a bearing in each one of said first and second plurality of transverse holes, said first and said second plurality of rods extending through a respective one of the bearings when no compressive forces are applied to said outer rails.

19. The printed circuit board support of claim 11 wherein said first and said second plurality of rods extend through the respective opposing inner rails and into the respective opposing outer rail when said outer rails are fully compressed.

20. The printed circuit board support of claim 11 wherein said biasing components bias said outer rails and said inner rails outwardly from said mid-block in directions as defined by the axes of said first plurality of rods and said second plurality of rods.

21. The printed circuit board support of claim 11

wherein said mid-block comprises a plurality of recesses in the underside thereof, and wherein a plurality of magnets are seated in said recesses.

22. The printed circuit board support of claim 11 wherein said outer surfaces are an outwardly extending lip formed on each one of said outer rails.

23. The printed circuit board support of claim 11 wherein said biasing components are coiled compression springs.

24. A self-adjusting printed circuit board support for use at a screenprinter station in a printed circuit board assembly line, said support comprising:

a pair of parallel outer rails, each having outer surfaces for abutting engagement with a plurality of spaced surfaces on a positioning device at said assembly station said outer rails having respective upper surfaces for supporting a printed circuit board;

a pair of parallel inner rails between and spaced from said pair of outer rails, said inner rails having respective upper surfaces for supporting a printed circuit board;

a mid-block between and spaced from said pair of inner rails, said mid-block having an upper surface for supporting a printed circuit board at said assembly station;

a plurality of perforations extending through said mid-block from said upper support surface to communicate with a vacuum source for drawing said printed circuit board against said upper support surface;

a first plurality of rods each fixed at one end thereof to a first one of said outer rails and extending through a first plurality of transverse holes in a first one of said inner rails;

a second plurality of rods each fixed at one end thereof to a second one of said outer rails and extending through a second plurality of transverse holes in a second one of said inner rails; and

a plurality of components for biasing each one of said outer rails and said inner rails outwardly from said mid-block, said outer rails being movable toward each other against the bias of said plurality of biasing components by compression forces applied against said outer rails;

said outer rails being movable between a fully open position when no compressive forces are applied thereto and a fully compressed position when sufficient force to compress said support is applied thereto, said first and said second plurality of rods extending at least into said mid-block when no compressive forces are applied to said outer rails, and said first and said second plurality of rods extending through the respective opposing inner rail and at least into the opposing outer rail when said outer rails are fully



compressed.

25. A method of positioning a printed circuit board at an assembly station with a support comprising a pair of parallel outer rails; a pair of parallel inner rails between and spaced from said pair of outer rails; a mid-element between and spaced from said pair of inner rails, said mid-element and inner and outer rails having upper surfaces for supporting at least one printed circuit board at said assembly station; and a plurality of components for biasing each one of said outer rails and said inner rails outwardly from said mid-element, said outer rails being movable toward each other against the bias of said plurality of biasing components by compression forces applied against said outer rails to fit said outer surfaces between and in abutting engagement with a pair of spaced surfaces on a positioning device; said method comprising:

placing said outer rails in abutting engagement with said spaced surfaces by compressing said outer rails and releasing said outer rails when said outer rails are between said spaced surfaces;

sequentially supplying printed circuit boards to said assembly station by a pair of feeder conveyor belts;

transferring said printed circuit boards from said feeder conveyor belts to a pair of assembly station internal conveyor belts;

raising said positioning device to lift said support upwardly between said internal conveyor belts to contact the underside of said printed circuit board;

drawing said printed circuit board to said support by a vacuum applied through said support, and through at least one perforation in said mid-element;

lifting said printed circuit board off said internal conveyor belts;

performing a printed circuit board assembly step;

lowering said support to return said printed circuit board to said internal conveyor belts; and

passing said printed circuit board to a pair of exit conveyor belts while another printed circuit board is fed by said feeder conveyor belts to said assembly station.

26. The method of claim 25 wherein said support will automatically adjust to the width fixed by any width-wise adjustment in the space between said spaced surfaces of the positioning device.

27. The method of claim 25 wherein a first plurality of rods each fixed at one end thereof to a first one of said outer rails and extending through a first plurality of transverse holes in a first one of said inner rails;

a second plurality of rods each fixed at one end thereof to a second one of said outer rails and extending through a

second plurality of transverse holes in a second one of said inner rails.

28. The method of claim 25 wherein the transfer of said printed circuit boards are indexed such that only one printed circuit board is on said internal conveyor belts during a printed circuit board assembly operation.

29. The method of claim 25 wherein said support is positioned on a metal plate and is held thereon by at least one magnet.